

Hobbies

WEEKLY

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October 11th, 1950

Price Fourpence

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THIS handy piece of household carpentry is just the thing to hold perishable foodstuffs, keeping them cool and free from dust and flies. It is of the size suitable for hanging on the wall, or standing, perhaps, on a convenient shelf. Alternative construction is also given for those who may prefer one to stand on the floor.

The Wood Required

A front elevation and a side section are shown in Fig. 1 with suitable dimensions. For the wood for frames, $\frac{3}{4}$ in. by 2in. deal is suggested. The front

A HANGING OR STANDING WALL SAFE

elevation shows only half of the door, to reveal interior construction a little. The work is quite within the scope of the average amateur carpenter, there being no difficult joints to encounter.

Make up the two side frames to dimensions given. The corner joints look better if mortised and tenoned as is usual in good work. Here the tenons on the cross bars should be cut with a shoulder, as at (B) in Fig. 2, and when chiselling out the accompanying mortises for them, it is as well to cut the side uprights a little over the finished length, to lessen any danger of breaking through the mortises at the ends, top and bottom. The surplus can, of course, be sawn off when the frames are finished.

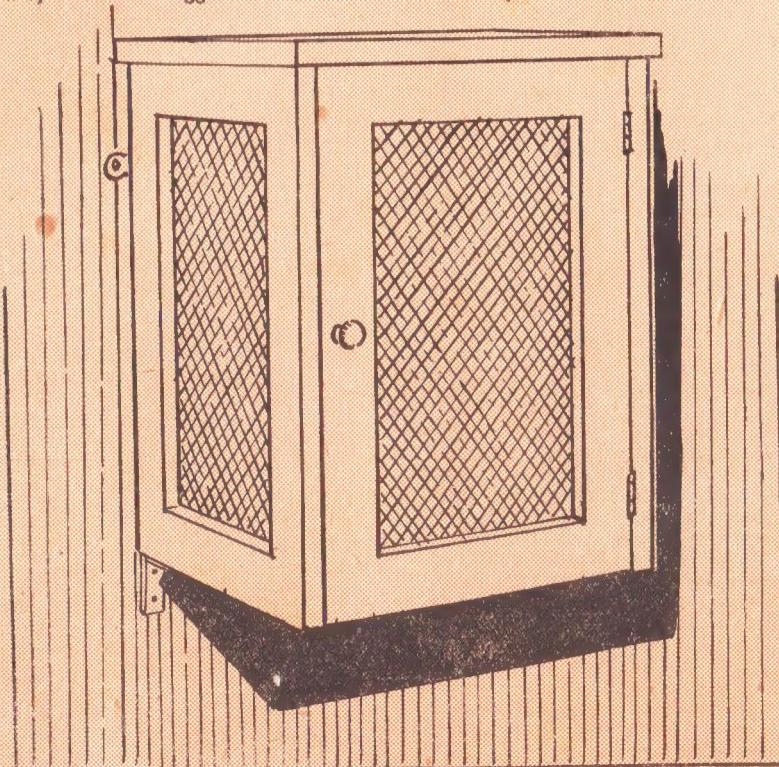
Halving Joints

A less business method of jointing the frames together is to use the simple halved joints for the corners, but to avoid the ugly appearance of the cut ends of the crossbars showing up in front, make the joints as at (C) in Fig. 2, where they are shown stopped at $\frac{3}{4}$ in. in. A much neater effect is so created. However, this is for the carpenter who may consider the extra trouble of the mortises and tenons too much for the job.

A detail of the further construction of the safe is given at (D). The bottom of the safe can be made up of $\frac{3}{4}$ in. thick boards, quite stout enough for a hanging article of this kind. The bottom is nailed to fillets, the fillets themselves being screwed to the inner sides of the frames at the place shown.

Door Aperture

Take particular note here that this bottom, also the fillets, are $\frac{3}{4}$ in. short of the front, to admit the door in level, and $\frac{3}{4}$ in. short of the back for the back of the



safe to lie level also, the back being nailed to the bottom.

Across the top of the safe, screw two bars of $\frac{3}{8}$ in. by 2in. wood. These also are short of the front and back the same as the bottom of the safe. By this arrangement the door, when fitted, will butt up against both bottom and top front bar. The top of the safe, of $\frac{3}{8}$ in. wood, can now be nailed over.

It should be level with the back and extend beyond sides and front just about $\frac{1}{2}$ in. The back of the safe should be cut from $\frac{3}{8}$ in. thick matchboarding, and be a tight fit between the sides. It is

plywood for this part, but the thicker wood suggested.

The door is framed up similarly to the sides and should be an easy fit in place.

CUTTING LIST

Side frames (4)— $\frac{3}{8}$ in. by 2ins. by 1ft. 8ins.
Side frames (4)— $\frac{3}{8}$ in. by 2ins. by 1ft. 2ins.
Door (2)— $\frac{3}{8}$ in. by 2ins. by 1ft. 8ins.
Door (2)— $\frac{3}{8}$ in. by 2ins. by 1ft. 1in.
Top cross bars (2)— $\frac{3}{8}$ in. by 2ins. by 1ft. 1in.
Top and bottom of safe— $\frac{3}{8}$ in. by 8in.
board. 5ft. run.
Back— $\frac{3}{8}$ in. by 4 $\frac{1}{2}$ in. matchboarding.
5ft. run.

the inside, but a much neater method is to fix it in place with beading both sides, as in inset drawing (A) in Fig. 1. A bit more trouble, admittedly, but worth it in the writer's opinion.

Screw a pair of stout brass wall plates to the rear of the safe, and screw to the wall. It is advisable also to either fit underneath the safe a pair of 6in. steel brackets, to take the major portion of the weight, or, if a brick and plaster wall is in use, a pair of wall plates of the pattern shown at (E) in Fig. 3.

These latter ones are driven between the lines of bricks, so should be fitted first, then the safe stood upon them, and holes bored through the brass plates higher up into the wall to receive the plugs for the screws.

The sides for a safe to stand on the floor, are shown in Fig. 3, the fillets for the bottom being screwed to the

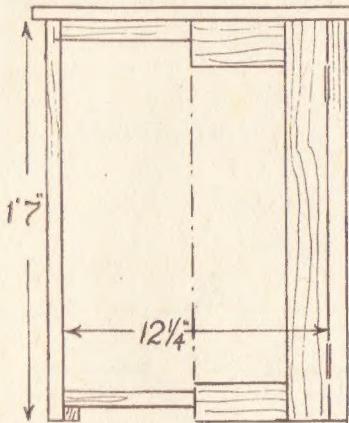


Fig. 1—Front and side elevation showing constructional details

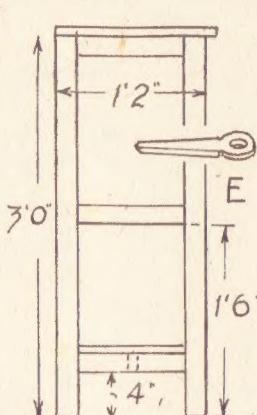
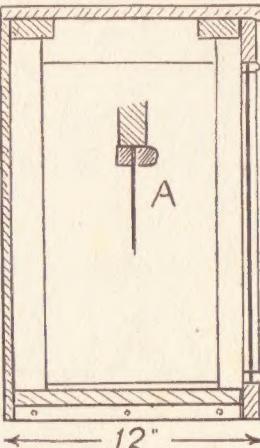


Fig. 3—Framework of sides

nailed to the back edges of top rear crossbar, and the back edges of the safe bottom.

As it forms an integral part of the structure, keeping it firm and square, it is well not to be tempted to use thin

hinge it with 2in. iron or brass butts, and fit with a cupboard catch or just a plain button fastener, as preferred.

The openings can now be covered with perforated zinc to keep out dust and flies. The zinc can be nailed over on

middle crossbar. The width can well be 16ins. Construction otherwise is similar to the hanging safe. A crossbar connects the lower side rails and a wood shelf could very conveniently be nailed across, as an addition.

From The Editor's Notebook—

WE have, from time to time mentioned the hobby of cigarette card collecting which was so popular before the war when every packet of cigarettes contained one of a set of cards of historical, nautical, geographical or general interest. Apparently new cards are now becoming available again, although not in packets of cigarettes. As usual we are having left-overs from what cannot be sent abroad because these cards were originally intended to go into packets in South Africa. But Premier Malan banned them and the complete sets were put in shops in this country. Sets of 'Famous British Ships'—including San Demetrio, Cossack, Jervis Bay—and 'The History of Aviation' have been on sale in shops at 25 for 1s.

* * *

ARRANGEMENTS and details for a collective hobbies exhibition are now being undertaken in Northampton by the members of the local Rotary Club. Readers living in the area should keep their eyes open for further announcements because they are sure to want to take part. It is hoped to hold it

in March next year, and although this may sound a long time hence, you must not forget that models up to exhibition standard cannot be made in five minutes. Details are obtainable from Mr. F. G. Slaughter at 14 Castilian Street, Northampton.

* * *

THERE has probably always been an interest in collecting lead soldiers, but nowadays, with the all-pervading khaki there cannot be the bright variety of former times. But at least one collector made almost a life study of it, and finished up with 50,000 pieces. Mr. Leicester Hewitt, who died recently started his hobby 64 years ago.

When he was thirty-seven, he gave up his position as joint managing director of a Leicester group of newspapers to devote more time to his collection. He never married, never allowed any other interest to interfere with his hobby. Each day he was 'on parade' for six and a half hours in the garage of his house at Hunstanton, Norfolk, where his collection was set out.

He even attended military manoeuvres

and consulted War Office experts to keep his collection up to date.

* * *

THE hobby of butterfly collection was dealt with during the summer in these pages, and those who decided to take up the hobby will have a difficulty in beating Mr. C. F. D. Colls, of Worksop. He has obtained no less than 4,000 specimens, which include over 500 varieties of moths and 54 varieties of butterflies. He uses breeding cages such as we recommended, rearing from both the egg and caterpillar age.

* * *

YOU never know what you come across when you start collecting! Two brothers, John and Geoffrey Burles, of Old West Road, Gravesend collect swords—no less than 28 of them—including a Burmese execution sword. But they had luck, for having paid 7/6 for a rusty old rapier they cleaned it up and found the hilt was of solid silver. Good going, wasn't it?

The Editor

All the details for the simple construction of a MODERN CRYSTAL SET

ONE great bugbear of the old type crystal set is the delicacy of adjustment of the cat's whisker on the crystal. When the sensitive point has been found, the slightest vibration or jar is sufficient to knock the whisker off. True, there are so-called permanent detectors of the double crystal type, but these are, in fact, only semi-permanent. They still require adjustment and are not so sensitive as the cat's whisker and crystal.

A Stable Detector

War-time research on radar has, however, changed all this. It was found during the war, that for certain purposes the thermionic valve was useless, and it was necessary to find an alternative. The cat's whisker and crystal was found to be admirably suited for the purpose but was, of course, too delicate as it stood,

for active service. After considerable research a completely stable detector was evolved.

The modern detector consists of a specially processed crystal with a tungsten cat's whisker sealed into a ceramic tube. It is absolutely permanent and rock steady, and maintains its adjustment indefinitely, provided that it is not misused. They are quite plentiful, and most radio dealers carry stocks of these crystal valves, as they are now called, at prices ranging from about 2/6 to 7/6. A sketch of these radar-type crystals is given in Fig. 1 (a and b).

There are many different types of crystal and some are more suitable than others for crystal receivers. Type CS7A which is used by the writer, is excellent for the job, but if this cannot be obtained, then your dealer will keep you right if you explain what it is for. As they vary slightly in size no dimensions have been

given for the crystal holder, but no difficulty should be experienced in making this item once the crystal has been procured.

The detail at Fig. 2 (a), (b) and (c) shows the component parts and method of assembly of the crystal holder. It consists of a small cube of wood with a groove cut along one face wide enough to accommodate the crystal. A $\frac{1}{16}$ in. brass plate is screwed to one end with small wood screws, and on the other end a small piece of springy brass is held by two small screws near the bottom.

The wood block should be slightly shorter than the length of the body of the crystal, so when it is inserted in the holder with the pin protruding through the hole provided for it in the $\frac{1}{16}$ in. brass end plate, the springy brass is bearing hard against the other end of the crystal, as shown in Fig. 2 (c).

A small piece of paxolin provides a cover for the holder and is held in position by four small wood screws. Paxolin is obtainable in most radio shops.

The Coil

As a crystal set does not amplify, it is necessary that it be as efficient as possible in order to obtain maximum benefit from the minute amount of radio power coming in via the aerial. For this reason

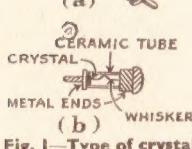


Fig. 1—Type of crystal and sectional detail

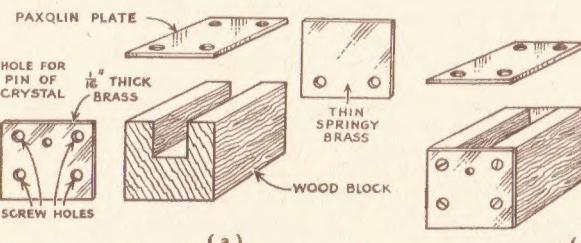


Fig. 2—Exploded and assembled view of holder, with section (c) of crystal in place

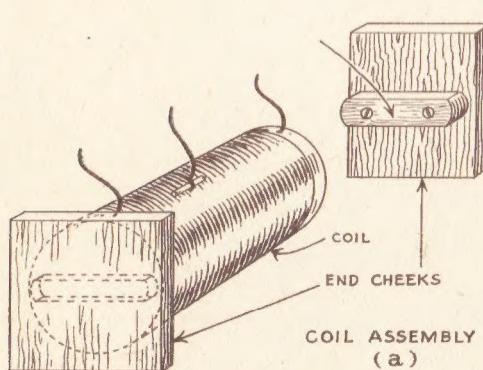


Fig. 3—Various details of the coil
(a) METHOD OF ANCHORING ENDS OF WINDING
(b) TURN OVER THE MATCH
(c) MATCH STICK
MAKING THE TAP
SOLDERED JOINT

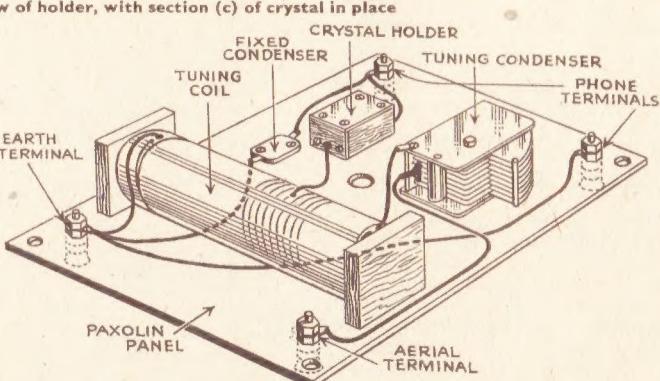


Fig. 4—A helpful view of set showing components in position

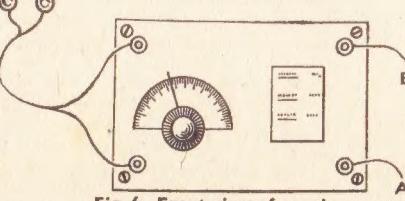
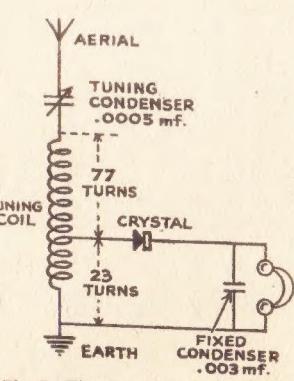


Fig. 5—The theoretical circuit



the coil is quite large by normal standards.

The former consists of a paxolin tube 6ins. long by 3ins. in diameter. A cardboard tube will do if it is thoroughly dried in an oven, then immersed in melted paraffin wax. The coil is wound with 20 S.W.G. double cotton covered wire.

Before the winding is commenced, two small holes are made $\frac{1}{2}$ in. from each end of the tube, as shown in Fig. 3 (b). The holes should be just large enough to allow the wire to pass through, and about $\frac{1}{2}$ in. should be allowed between one hole and the other.

Winding the Coil

The winding is begun by passing the end of the wire down through one hole and back through the other. This free end should be about 8ins. long. Count the turns carefully as they are wound on, and at the 23rd turn place a match stick on the winding and wind the 23rd turn over it, then carry on winding.

The turns immediately following the 23rd turn are pushed under the match-stick until the winding is clear of it. When a total of 100 turns have been wound on to the tube, cut the wire from the reel and thread the free end of the coil through the two holes at this end of the tube. Leave 8ins. or 9ins. free for connections.

The 23rd turn, which was wound over the match, is the tapping point and is now protruding above the surface of the coil. A length of wire is cut from the reel (again about 8ins.). The cotton covering is scraped from the tapping point and one end of the wire is soldered to it.

Mounting blocks, or end cheeks, are

now made to support the coil. They are made from wood and the construction should be quite clear from Fig. 3 (a), whilst the other points with regard to the coil winding will be seen in Figs. 3 (b) and (c).

Assembly

Other components required are, a .0005 microfarad tuning condenser, .002 microfarad fixed condenser, tuning scale and knob, four terminals, a small quantity of 20 S.W.G. tinned copper wire, some systoflex, and a few small wood screws. Fig. 4 shows the set built on to a paxolin panel $\frac{1}{2}$ in. thick for mounting in a small wooden cabinet.

If desired, of course, this method of construction need not be adopted. The set could be built on to a baseboard with no cabinet; it is a matter of individual taste.

In this case, the crystal holder is fixed to the panel by two small wood-screws and, similarly, the coil is fixed by two wood-screws in each end cheek. The fixed condenser may be fixed to the panel by means of nuts and bolts if holes are already provided in the component for this purpose.

Single-hole Fixing

If there are no fixing holes in the condenser, then it may be supported in the wiring for it is quite small and light. Nearly all small tuning condensers such as used in this set, have provision for single hole fixing by means of a large nut on the threaded shank which carries the spindle. For baseboard mounting feet are usually provided.

Wiring of the set should present no difficulty if Figs. 4 and 5 are carefully studied before starting. To assist those

who have little experience of diagrams of this description, here is a point to point description of the wiring.

Aerial to one terminal of the tuning condenser. Other terminal of the condenser to that end of the coil remote from the 23rd tapped turn. Other end of the coil (nearest the tap) to earth terminal.

Tap on the coil to one terminal of the crystal—it is only necessary to solder the wire to one of the brass plates. Other terminal of the crystal to one phone terminal. Remaining phone terminal to the earth terminal. One fixed condenser terminal to the earth terminal, and the other to that phone terminal which is connected to the crystal.

That, then, completes the wiring and it is now only necessary to don the phones, fix on the aerial and earth, and twiddle the condenser knob until the stations roll in.

Aerial Necessary

Incidentally, a good aerial is necessary if the listener lives more than a few miles from a station. It should be as high as possible and about 80ft. in length. A good earth is also required. This can be a spike or large tin buried in the soil, or failing that, connection to a main water pipe.

A front view of the writer's set is shown in Fig. 6. The tuning dial used here is an ex-W.D. component marked from 0—100. The station chart was, therefore, pasted on the front panel to enable other members of the family to tune in without trouble. This set has in fact been in great demand for bed-time listening.

No doubt many readers will be anxious to make their own for similar use. (139)

Two Handyman Suggestions

When Stoppers Stick

THE man-about-house is often asked to deal with the tricky problem of removing a glass stopper from a bottle in which it has jammed. If gentle taps have no effect, try this way. Tie one end of a fairly thick string to a hook on the wall.

Give the string one turn around the bottle neck, and hold the other end in the hand, so that the string is taut. Move the bottle back and forth. The friction of the string will cause the bottle-neck to become warm, and expand quicker than the stopper, thus enabling the latter to be removed.

If this treatment fails, and the bottle is of some value—say an antique carafe—ask a chemist to mix up the following solution: 2 parts of alcohol, 1 part of glycerine, and 1 part of common salt. Apply this to the stopper, and let it soak through. After a few hours the solution should have done its work.

Sometimes one is asked to try to remove a cork which has accidentally been pushed into a bottle. It can usually

be removed with a piece of string in either of two ways: (1) Insert a doubled string in the neck of the bottle and manoeuvre so the cork lies within the 'U' of the string. Get it near the neck, and with a sharp jerk pull it out. (2) Instead of a looped string use a thin string which has a large knot tied at the end. The principle is the same as the foregoing.

Freshen up the Wallpaper

WHEN wallpaper looks dingy, a considerable improvement can be effected by sweeping it with a special wallpaper brush. Indeed, this should be done regularly. There comes a time, however, when, although the paper is not dirty enough for replacement, it would benefit from a cleaning-down process.

Wallpaper Cleaner is a doughy substance which can be purchased from a builder's supply warehouse, but it can be made more cheaply at home, in bulk.

You will need the following ingred-

ients: 1½ lbs. whiting; 5lbs. of plain flour; 3ozs. of ordinary salt; 5ozs. of soda ash; 4ozs. of powdered pumice stone; $\frac{1}{2}$ oz. of oxalic acid (be careful with this as it is poisonous); and 4ozs. sal-ammoniac. All these are mixed, dry, and just before use, a portion is mixed with water to form a stiff dough, and a few drops of kerosene added.

This doughy ball is rubbed over the wallpaper in long sweeps, and as the face of the material becomes soiled, it is kneaded into the rest. Apart from cleaning wallpaper, the material is also useful in cleaning the edges of books.

It occasionally happens that grease gets splashed on a wall, and this is very unsightly. It can be removed by covering the spot with a piece of thick, good-quality blotting paper, and holding a hot iron against it. An electric iron is best, of course, as the heat may better be maintained, but ordinary flat-irons serve well if two or three are used in relay.

Stains caused by dampness can usually be traced to walls which need repointing.

Here is another type of easy-to-make table CIGARETTE SERVER

In a previous article instructions were given for a simple cigarette 'server', for use at parties or on dinner tables, or indeed anywhere when guests are expected to help themselves. Here are details of a rather more elaborate server which will hold twelve standard-sized cigarettes.

A piece of $\frac{1}{4}$ in. material is required first on which two circles each of 2 in. diameter can be scribed. Inside both the circles the six-sided figure shown is drawn, this being obtained by placing the leg of the compass, which is still set at the 2 ins. at any point on the circumference and by swinging in both directions making two marks (on the circumference)—one on either side.

Move the compass leg to one of these points—it does not matter which—and swing again, continuing thus right round the circle. If correctly done the circumference should divide exactly into six equal parts. Join the points so found by straight lines and the desired shape is secured.

Two Hexagon

The six-sided shapes are then scribed out, the one as (A) and the other as (B), Fig. 2. On both shapes lightly mark in the radii from the six points to the centres and put in the line (a) which is a $\frac{1}{8}$ in. from the points, along the radii, that is a shade less from the outside edges.

On the second piece (B), the one that is going to be the upper level, mark the points (b), a $\frac{1}{8}$ in. more along the radii. The holes which are to take the cigarettes are of $\frac{1}{16}$ in. radius and points $\frac{1}{16}$ in. further still along the radii give the centres of the corner ones, and these can be drawn in.

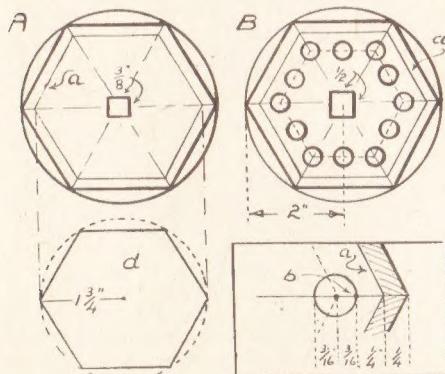


Fig. 2—How to make the shapes

Now join the centres of these six corner holes and you get the centre-line for the intermediate openings which lie mid-way along the flat sides. The centres of these secured, they also can now be marked in.

Next required is the second base-piece

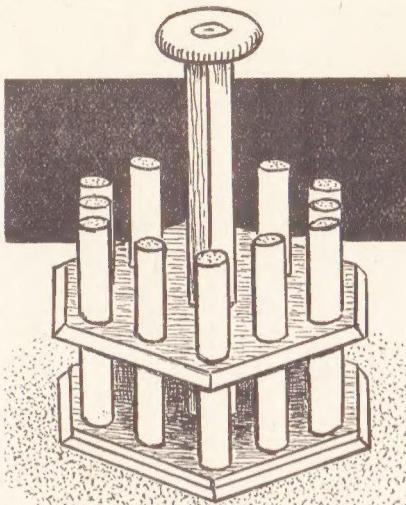


Fig. 1—A completed stand for 12 cigarettes

(d). This is from a thin section of material, $\frac{1}{8}$ in. or $\frac{1}{16}$ in. thick. The shape is obtained by drawing a circle of $1\frac{1}{8}$ ins. radius, marking off the circumference as above in radii lengths, and again joining up the points found.

Temporarily fasten this piece to the top (B) with two or three fine sprigs and aligning it to the line (a). Carefully bore down through the two sections at each hole position. A standard cigarette is just $\frac{1}{8}$ in. diameter so the apertures are first taken out to this measurement and then eased off with a round file or glasspaper wrapped round a thin pencil or skewer, till a nice comfortable fit is secured for the standard 'smoke'.

The Base

When all is ready separate the pieces and bevel the edges of the top and under sections (A) and (B) as far as the first line (a). This will give a pleasing slope. After this secure (d) to the base-piece (A) with glue, putting under pressure while drying takes place. See to it that the edges of (d) nicely meet the top of the bevel, glasspapering a little if necessary to obtain this end.

A base having twelve circular depressions has now been made and at this junction check to see that all these are quite free from unwanted bits of glue, etc., as at the best they only just grip the ends of the cigarettes.

Now take a $\frac{1}{4}$ in. square opening out of the centre of (B) and another of $\frac{1}{8}$ in. sides from the middle of the base. These are for the handle (G) (Fig. 3). It would be nice if this latter could be turned on a lathe at the top to some pleasing shape, but in lieu of this finish, a square-section length of wood with a 'button' on top

will do quite well.

In either case the lower end (g) is taken to a square section of $\frac{1}{8}$ in. sides for $\frac{1}{8}$ in. up, and to a $\frac{1}{2}$ in. section for the next $1\frac{1}{8}$ ins. up. If a square section handle is being used throughout, this section can be retained to the top, otherwise any turned part would start here. The length of the handle is $5\frac{1}{4}$ ins.

Handle Piece

The top of the handle is completed with any of the circular 'buttons' that can be obtained at dealers in wood fittings. It should not be too large—about $1\frac{1}{8}$ ins. doing nicely. The button is secured to the top of the handle with a round-headed chromium screw, a chromium washer being put between the head and wood to give a bright finish.

Assembly of the three main parts can now be effected. If well cut this will not be difficult as the square hole should grip the upright fairly tightly and at a true right-angles. This ideal is not always obtained, but it is essential that the main pieces are perfectly horizontal and at an accurate ninety degrees to the upright. To this end two blocks of wood of the same thickness should be slipped between the pieces as gluing and drying proceeds,

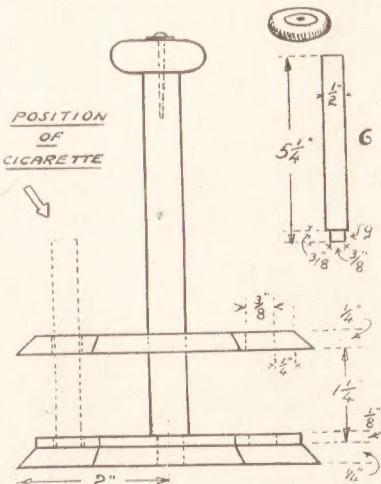


Fig. 3—Section and detail of spindle

the upright being checked with a set square.

As with the first server described, finish can be with stain or stain and polish, or if good wood has been used a plain finish could be adopted. A too-dark livery should definitely be avoided, anything to do with cigarettes for some reason always looking better in a fairly light setting.

Thin baize should finally be glued to the underside of the base to give safety on even the most highly polished surface. The server as given is designed for the standard cigarette.

Practical improvements brought about by these HOME CONVERSIONS

SO many of us find today with the family growing up and the steadily increasing cost of houses that we have got to make some more room somewhere in the house. Many of us are quite fortunate if we have a loft room. Unfortunately, we cannot always find the right type of furniture, but we can have a look round the second-hand dealers and pick up some interesting bits and pieces.

An Attic Dressing Table

In Fig. 1 is a little chest of drawers which we often see at the dealers. It is a bit out of date but still it can form the basis for a window fitment up in the loft. Clean it up and mend the drawers. Mount it a little off the floor, although some of them have a fancy scroll and foot at the base. Adjust it to meet the bottom of the window.

Now, on each side, extend the shelf with a wide sweep as shown. Fit this first in $\frac{1}{2}$ in. board and then cover the top with plywood or Lloyd Board to give a

achieve this but the main secret of space gaining is in the making of the light wood trays or boxes, as shown in Fig. 2. These should be carefully measured and made from plywood with strengthened corners. They should fit cleanly underneath the shelf when the door is shut. Make certain that they will clear the side of the cupboard with ease.

As the boxes will be used for small items, perhaps, you can make separate partitions in them so the items are kept tidy and neat. Smaller items can be put into shallow cardboard boxes as this system is always a good space saver.

A Newspaper Holder

Newspapers are always strewn all over the average house but the obvious suggestion is to find a place where they can be stowed without getting in the way. You can probably fix this in some narrow part between the wall and the sideboard. Being at an angle (see Fig. 3), one can sort out the papers and choose the one he or she wants without disarranging them.

iron brackets can be bent to an angle of 30 degrees and fitted as shown. Stain the fitment or paint to match the room. Do not let it get overloaded, otherwise it will cease to be useful.

A Cocktail Cabinet

Whether it is the advent of Television or not we cannot say but there are plenty of very good gramophones about today which can be picked up cheaply. These can be converted at very little expense into a cocktail cabinet or an attractive piece of furniture for the drinks (see Fig. 4).

The lower cupboard which housed the records may need little alteration, although you may like to put on some more modern doors. Add some of the new streamlined handles in a pleasing colour. The slats or grid can be removed and any other fittings taken out of this part. Here you can keep other items used for festive occasions.

Under-Lid Compartment

As the lid is most likely well domed it

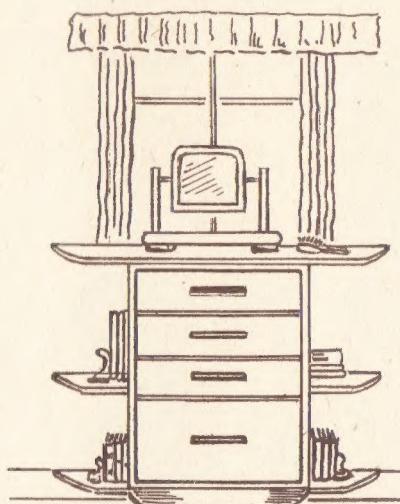


Fig. 1—A hold-all dressing table

neater finish. The shelves below are most handy and follow the lines of the top sections. Bring one to the height of the skirting on which it can rest, but do not have it lower as it will create dust. Plastic sheet is now available and cut to the required shape and size would make a very attractive finish.

Tray Arrangement

There is no doubt that the average cupboard used for clothes does also have a very large amount of space wasted which could be used to advantage with a little planning. This can be done by arranging that the larger things on the shelves do not come too high. You can re-arrange your shelves to

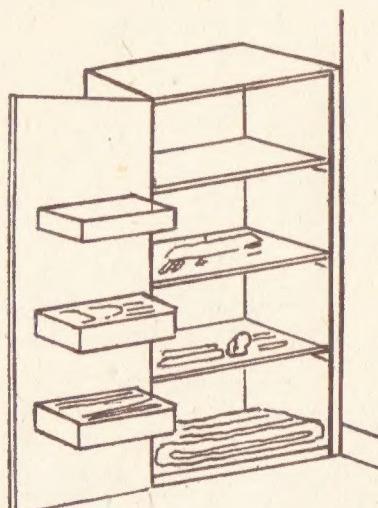


Fig. 2—Boxes inside the door

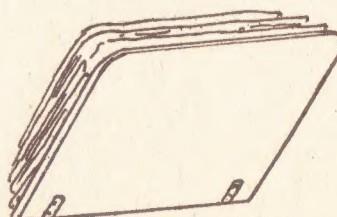


Fig. 3—A leaning newspaper rack

You will need a piece of fairly good $\frac{1}{2}$ in. plywood about 12ins. by 16ins. Plug the wall so the two brackets can be screwed on. Two of the ordinary flat

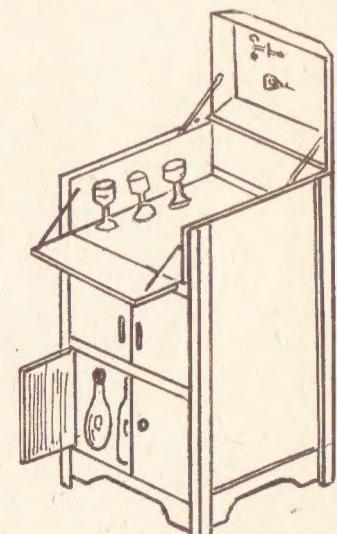
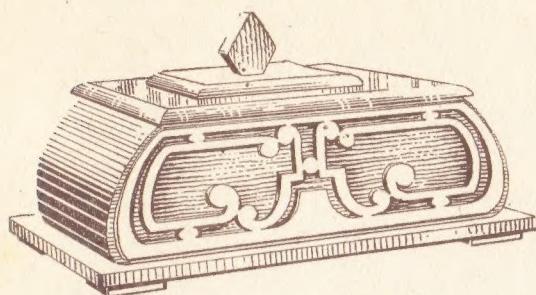


Fig. 4—A converted gramophone cabinet

will need little improvement to make it suitable for the glasses, etc. If there is not sufficient depth this can be altered and a flap hinged on to make an additional table. Cork-screws and other necessary instruments can be fitted in the domed roof. All other fittings can be left in position, as they will still function in their new role.

All these alterations and conversions can be made by the home handyman, and there are doubtless many others which will suggest themselves. Keep your eyes open at any local sale of furniture or in the window of those second hand dealers where you can pick up articles cheaply and convert easily to your own particular requirements. (201)

Patterns on page 31 for this handsome BEAD OR TRINKET BOX



The attractive completed box

QUITE a modern touch is introduced into the attractive little box shown in our illustration at Fig. 1. This article would be very suitable as a birthday or Christmas gift for a lady, and would look well when nicely polished and finished on the dressing table. We have been able to devote a whole page in this issue to the full size details of all those parts which would otherwise need enlarging from a smaller diagram or tracing by means of carbon paper.

Suitable Wood

The wood required for the box will be $\frac{1}{8}$ in. thick for the base, the lid, and the top overlay on the lid; some $\frac{1}{16}$ in. stuff for the two sides and smaller pieces of $\frac{1}{8}$ in. for shaping for the ends. The handle could be either $\frac{1}{8}$ in. or $\frac{1}{16}$ in. thick, and the overlays on the sides may be of quite thin wood but preferably $\frac{1}{16}$ in. stuff or even ivorine.

An endeavour should be made when buying the wood to get good contrast in shade or colour between the main wood and the fretted overlays. Of course contrast can be got by stains, the box being perhaps of light coloured mahogany, while the overlay is white. Stain should, in this case, be applied to the mahogany to increase the depth of tone before the overlay is stuck on.

Copy the Patterns

The construction of the box is simple. The patterns show the side overlays contained within the outline of the side. It will be necessary, therefore, to trace in the outline of the two sides direct on the wood by means of carbon paper, then this leaves the overlay pattern intact for sticking down to the thin overlay material.

Two pieces of the thin material can be pinned together and the pattern then stuck down to the uppermost layer and the two pieces thus cut together simultaneously. This method saves a great amount of time. The method of making the floor and base is given in

Fig. 1. The latter consists of four mitred strips, given full size on the pattern page. Mark these out on to the $\frac{1}{8}$ in. or $\frac{1}{16}$ in. wood and cut them in the usual way with the fretsaw.

The four pieces are glued together, and the inside angles may be further strengthened by adding four glued angle blocks as seen at (B) in Fig. 1. On this open

frame will be glued the $\frac{1}{8}$ in. thick floor measuring $6\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins. This is seen in Fig. 1 as a sectional diagram and shows how the piece must have an equal margin each side and each end of the mitred base strips so as to allow the sides and ends of the box, when made up, to stand evenly all round.

The enlarged circled diagram in Fig. 1 shows, by section, how one end of the box will appear when it is glued to the base and in relation to the floor piece. Small square glued blocks about $\frac{1}{8}$ in. in section and cut from spare wood may be added beneath the floor as seen at (C) in Fig. 1.

Box Construction

The box is built of two sides and two ends. It is assumed that the two sides have been outlined on the wood and cut out and cleaned up, so the next process will be the fixing of the ends. Turning

If two pieces of wood $\frac{1}{8}$ in. thick and of the same variety as the remainder of the box can be obtained then these can be used straight away. If, however, this thickness is unobtainable, then a different variety of wood is quite permissible and could be cut and shaped and afterwards covered with a thin veneer of wood glued on.

Rounded Ends

We show in Fig. 2 the best way of fixing the ends to the sides, previous to shaping and paring away the unwanted wood, using the shaped edges of the sides as a guide for this work. Screw through sides of the box to strengthen the connection or use long fret pins for this purpose.

If, say, mahogany is used for the ends, then the shaping can first be done with the pocket knife or chisel for getting off the corners of the blocks and the remainder of the shaping done with the rasp and file, finishing off with glasspaper. When all the shaping has been done satisfactorily, the whole box may be glued to its base. Glue a couple of $\frac{1}{8}$ in. square angle fillets, or better still, triangular fillets along inside so as to strengthen the joints.

The lid of the box consists of three plain pieces of wood glued together as (A), (B) and (C) in the diagram Fig. 3. The main large section (A), measures $5\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. by $\frac{1}{8}$ in. thick, and to the top of this is glued a piece shown as (B) on the pattern sheet. This, and the main section of the lid has its edges shaped as shown in the cross hatched section on the sheet.

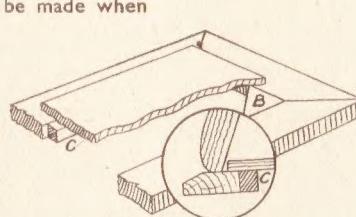


Fig. 1—Floor construction

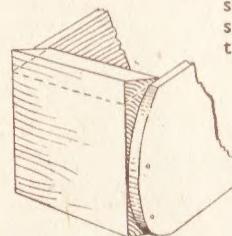


Fig. 2—The end block

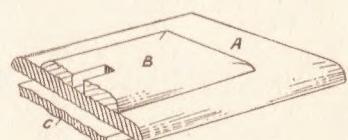


Fig. 3—The 3-piece lid

again to our patterns we see these are of thicker wood than the rest of the box, viz. $\frac{1}{8}$ in. It will be necessary therefore, to choose one of two methods of making the ends.

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Lid Fitting

As the lid is a simple lift-off cover a means must be found to hold it in place. We therefore add a third layer (C), and this goes beneath the large main lid, the exact size being best obtained by measuring the opening of the top of the box itself when it is made up. The piece (C) is $\frac{1}{8}$ in. thick. Note the $\frac{1}{8}$ in. by $\frac{1}{8}$ in. mortise cut centrally in piece (B), this is to receive the tenon on the small handle shown full-size on the pattern sheet.

The finish to be put upon the box will be left to the individual worker, and the variety of wood used, will of course, have some control over the finish. Four square feet as shown on the pattern page and cut from spare wood will add to the appearance of the box.

Further instructions on the fascinating hobby of STUFFING BIRDS

WHEN the work described in the first article has been done and the whole process of the stuffing and wiring is satisfactorily completed, the actual mounting should not be long delayed. Time wasted at this point allows the specimen to 'set', and difficulty may then be experienced during the final poising of the model.

In practice, it may be found advantageous to prepare the small tree branch or stone on which the specimen is to be mounted at the same time as the stuffing is being carried on. It can be worked in while the skin is drying off.

Type of Base

The choice of a base for the model will depend on the model itself. Tree-perching birds will be required to be mounted on a twig to give the most natural effect, while birds of prey are best set off on a small rock or shingled level. The beginner was advised to practice on a starling, and it will be assumed that this has been satisfactorily stuffed.

A small branch of apple or pear, not newly-cut wood, serves well; it should have a slight fork and be roughly 9ins. in length. Nail it securely to a platform about 8ins. by 5ins. and $\frac{1}{2}$ in. deep (four ply wood would serve), setting it about the middle. If two specimens are being mounted make the platform and branch larger accordingly.

Natural Additions

When this has been done it must be adorned with moss, lichen, stones, and touched up with paint to give it a suitable appearance. In all his work the taxidermist aims continually at naturalness.

The platform should be coated chiefly with moss, though a little lichen at the

base of the twig often helps to give a very natural effect. Glue the moss on in a fairly thick layer, making sure that its thickness is penetrated by the glue. Paint the sides of the shallow platform a green which matches the moss as nearly as possible.

Several kinds of lichen can be used on one model, and a supply is easily gathered from orchard trees and decaying logs. Suitable moss is also found on old logs, and in most garden lawns.

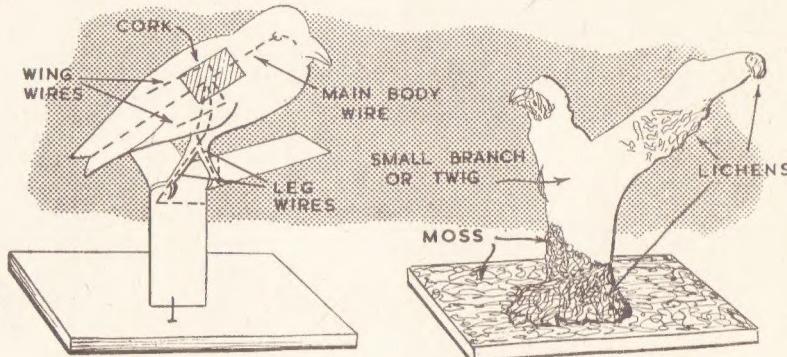
Paint the twig before attaching any lichen, which should be generally green, with a touch here and there of brown and ochre. When it is dry, stick on small pieces of various lichens. Do not put too many pieces, or the base will look overdone. Touch them up with slight dabs of greens and browns, and a slight splash of ochre. Again, the beginner is

it will be found that one foot will be below the other; and the body must be gently manipulated to give it a natural poise on the splayed legs. The wings should be lifted slightly away from the body, and set to the desired position by the wires inside them. Similarly, set the poise of the head by means of the neck wire.

Splay the claws of the foot so they grasp the twig, pinning them into position for a few days if necessary until they set. Be gentle with these, as they soon become brittle.

The Final Touches

When the final touches to the placing and poise of the specimen have been done there is little more work. A very tiny dab of red at the base of the beak may be added, and the beak itself can be



Details of bird mounting and natural branch base work

warned not to use too much paint for it can always be added, but is not easily taken away at a later stage.

If a bird of prey is being dealt with pebbles would be used on the platform, and perhaps a stuffed mouse or broken egg-shell added for effect.

Mounting the Specimen

When the base is complete, decide the position and poise of the specimen. On these will depend the placing of the feet. Drill a fine hole through the twig, and pass the feet wires through it with the aid of pliers. The wires should be wound round the twig once, and can be hidden by a piece of lichen. The feet should rest tightly and securely against the wood.

The model is now nearing completion, but the beginner will probably experience difficulty in giving the bird a natural poise. If, as is advised, attention is given to the specimen in its natural state it should not be too difficult. A point worth bearing in mind is that a slight turn or twist of the head often puts the finishing touch. This is because it is an extremely natural movement of all birds, irrespective of habit and habitat.

Unless a flattened twig is being used,

given a thin coating of yellow. Use paint which is only the slightest bit brighter than the natural colour.

A coating of light varnish can be given to the legs and feet. Care must be taken not to allow any of the paint to touch the plumage of the bird.

Brush the Plumage

If the plumage at the breast of the bird, where the cut was made, does not lie too well brush it gently with a fine-haired brush or comb with a fine comb. Do not wet it in an attempt to make it lie down. The whole specimen can be brushed gently to make the plumage lie naturally and to keep it dust-free from time to time if it is not to be put into a case. Cased specimens are far more common, but a well-constructed uncased model often has a far more pleasing effect.

Annealed wires which are best used for taxidermy number from the largest, Size 1, but only Sizes 16-22 will be required for birds mounted at first by the beginner. Artificial eyes number from the smallest, Size 1, and are obtainable in various colours such as brown, hazel, yellow, green and blue, and so on. Oil colours, in tubes, are best used for touching up the models.

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There is a big demand by amateur photographers for a VERTICAL ENLARGER

THREE comes a time when the amateur photographer is dissatisfied with prints the same size as his negatives. The lack of funds, however, may prevent him from progressing in his hobby. In this article an enlarger is described which will suit the purse and requirements of beginners to this fascinating art.

It can be made for less than £1 and has been designed for negatives up to $2\frac{1}{2}$ ins. square, so enlargements can be made up to whole plate.

The tools needed are simple and any reader of *Hobbies Weekly* is almost bound to have them in his workroom.

The most important things are, of course, the lenses. The condenser lenses are of the moulded type and cost about 5/- each. The focusing lens the author used was taken from an old 120 box camera—(the camera purchased for the purpose costing 6/-). It was, however, the result of a little patient enquiring at junk shops.

Focal Length

It is important that you choose a camera that produces a negative $3\frac{1}{2}$ ins. by $2\frac{1}{2}$ ins., because the focal length of the lens will be 4ins. or just over. This enlarger has been designed for use with a 4in. lens. The other items you need are two tins, wood, three right angle brackets, paper, gum, paint, etc.

The first things to make are the focusing tubes, which are made of paper.

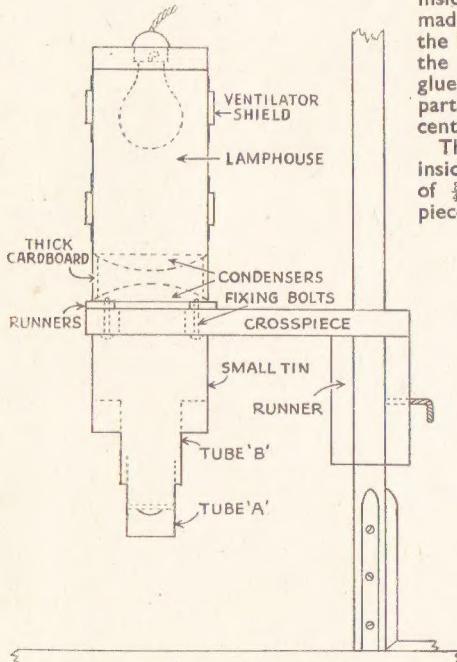


Fig. 1—A side view showing position of parts

Obtain a round former about $1\frac{1}{2}$ ins. in diameter, such as a small round bottle or a short length of stout pole. Cut strips of brown paper roughly 5ins. wide. Start winding the paper round the former, gumming all the time until a thickness of $\frac{1}{16}$ in. is reached. Bind the surface with transparent tape.

A Second Tube

Then immediately over the top of that build another tube exactly the same thickness. The windings should be as tight as possible, and a liberal amount of gum will make a strong job. Put these in a warm place to dry, and when dry, cut them down to $2\frac{1}{2}$ ins. For future reference we will call inner tube (A), and outer tube (B).

The next thing to make is a jig of strong thin cardboard (see Fig. 2). Obtain a tin over 3ins. high and not less than $3\frac{1}{2}$ ins. in diameter. Cut the rim down to 3ins. from the bottom of the tin. Find the centre of the base and puncture it with a fine nail. Put the mark (X) of the jig over the mark of the tin, plot the positions, cut out the square and drill the holes.

Get a piece of 1in. thick wood and cut a circle out so it fits snug in the tin. Cut another circle out of the wood so tube (B) makes a good tight fit. These have to be fixed later, but it is important that they fit exactly square.

Lens Holder

The lens holder is cut from $\frac{1}{2}$ in. hardwood and is made to fit tight inside tube (A). Another central hole is made in this disc, slightly smaller than the lens. The lens can now be glued on the circle by the use of a very strong glue on the extreme edges. Make particularly sure none gets on the centre of the lens.

The lens holder is now glued 1in. inside tube (A). Cut the crosspiece out of $\frac{1}{2}$ in. hardwood (see Fig. 3). Two pieces of good quality glass are now

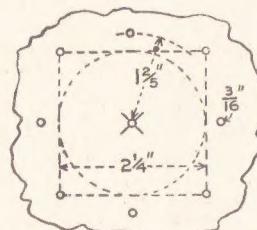


Fig. 2—The cardboard jig

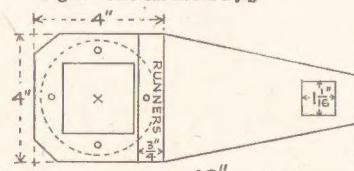
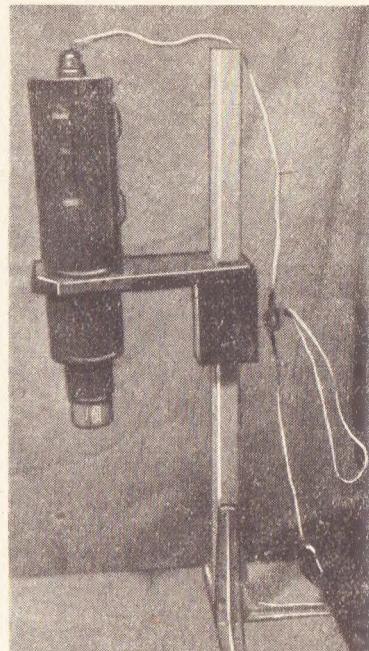


Fig. 3—Dimensions of the taper arm



Photograph of the enlarger in use

needed. If they have to be cut for the purpose it is wise to rub the edges down smooth on a carborundum stone soaked with turpentine. Lay the glass on the crosspiece so the margin on each side of the square is equal. Tack on the two runners which are slightly thicker than both the pieces of glass together.

The Lamphouse

The lamphouse finishes this part of the enlarger. It consists of a tin $3\frac{1}{2}$ ins. diameter and about 8ins. long. Your local hairdresser may be able to help you with one of the tins he gets his shaving powder in. The bottom of the tin has to be cut and drilled to the size of the jig. At the top and bottom of the tin you will need ventilation holes covered by strip metal (see Figs. 1 and 4). Drill a $1\frac{1}{2}$ in. hole in the lid of the tin and fix a bulb holder. Connect this with a length of flex with a suitable plug on the end. It will be found most useful to put a switch in the flex about 2ft. from the lamphouse.

Now the whole thing is ready for
(Continued foot of page 26)

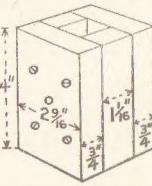


Fig. 4—Ventilator shield

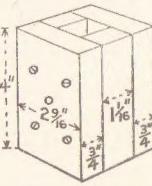


Fig. 5—Runner piece for the pillar

Carry your impedimenta easily inside this bamboo NATURALIST'S STICK

THE field naturalist, whatever his particular calling, is often encumbered with a great number of small articles which are very necessary for his work. It is possible to carry many of these in an unusual and useful way, and this article is intended to show how a walking-stick, which in itself is a most valuable asset to the naturalist, can be improvised for the purpose.

The stick itself is of bamboo, about 1½ins. diameter, and this can be purchased from a shop or furniture dealer. It should be about 3ft. long overall and have only two joints, equally spaced on its length. Burn and hollow out the top to a depth of a few inches, and fashion a small block which will fit tightly or screw into the hole.

This should not be as long as the hole burnt into the stick, as on to the bottom of the new block may be fastened a small trowel or spike which will be most useful for digging up pupae specimens. It can also be stuck into the trunk of a tree to assist in climbing and can be screwed firmly into the base of the block. Into the head may be fitted a small compass. This should be sunk so its surface is level with the end of the stick, and there is little likelihood of its becoming broken as it is normally shielded by the hand.

Hollow inside of Stick

The complete portion of the bottom joints of the stick is then hollowed out in the same way. This gives a receptacle of 2ft. or so in length. To take the place of the original wood make a small wooden bar of a few inches which fits easily into the hole.

This bar should in turn be hollowed, and the end which will be the end of the stick when it is in position should be shaped so that it will plug into the stick, and also have two small holes drilled into it. A small brass ferrule will strengthen this base of the stick, and prevent it from splitting.

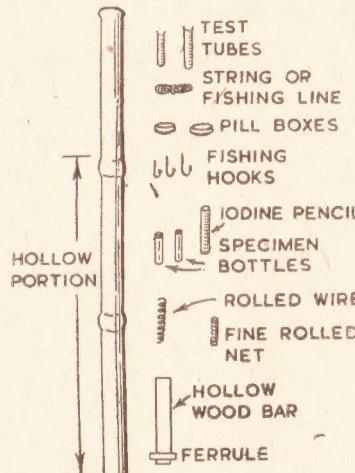
The two small holes are for a loop of wire which may be carried in this hollowed block, together with a fine net which will roll and fit easily into the space as well. This net is useful for

catching butterfly specimens and water animalcula. If the ferruled end of the new block fits into the hollowed end of the stick a few extra inches can be added to the stick as a whole if this is ever required.

A small test tube should be carried in the hollow portion of the stick. When netting water specimens this can be fastened to the bottom or centre of the net with an elastic band, and while the water drains from the net the specimens will sink into the tube.

What can be carried

What is carried in the remaining space in the stick is largely a matter of choice.



What the hollow stick can hold

Several small phials may be inserted, as these are always required. A tube of methylated spirits, some cotton wool, string, fishing line and hooks, screws, an iodine pencil, a tape measure, dipping-tube, a small bottle or two. All these can be carried and there should still be some space left. Several small lenses will also take up very little room.

For Measuring

The length of the stick can be marked off with a knife into feet, and will be found a useful measuring-stick. It can

then be used to measure heights. If the rough height of a tree is wanted drive the stick into the ground, mark its shadow, and measure it. Then measure the length of the shadow of the tree from which its height can thus be calculated.

An Improvised Telescope

A useful observation glass can be made simply which is easily used in conjunction with the walking-stick. The best lenses for this are a convex 1.50 and a concave 16 or 20. These numbers represent the strength of the glasses. In the lid of an empty blacking tin or a similar one cut a hole about the size of a silver threepenny piece, and place the concave lens in the lid.

To make it fit tightly cut a strip of cardboard and glue it firmly round the inside of the lid to make the lens sit in position. Over the lens glue a piece of black paper with a hole about ½in. in the centre. The eye-piece is then complete, and on to it should be soldered a 'screw-eye'. This is screwed into the 'eye' end of the walking-stick when the observation glass is used.

From the bottom half of the tin cut a circle almost the size of the convex lens, and mount the lens inside with a cardboard ring as before. On to the rim of this half of the tin solder the stem of a ferrule which will slide up and down the walking-stick. When in use a strong elastic band will be sufficient to keep this sliding object-lens in a desired position.

It will be realised that when the observation glass is in use one sees all round the object-lens as well as through it, but this is to some extent an advantage as the object to be focused is easily seen before the observation lens is brought upon it. The two lenses are best carried in the pocket when not being used in conjunction with the stick.

An air hole or two may be drilled in the hollow part of the stick, and such specimens as lizards, beetles, and larvae can then be carried inside without them dying.

This simply-made walking-stick will be seen to have a multitude of uses, and is really an invaluable aid to the naturalist.

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Enlarger—(Continued from page 25)

assembly. Three ½in. by 1½in. nuts and bolts are all that are needed. Put all the holes in alignment and pass the bolts from inside the lamphouse down into the smaller tin. You will notice the fourth hole is not used or it would obstruct the negative carrier. Finally the wooden circle is glued in position in the smaller tin along with tube (B).

The base is 18ins. by 11ins. off ½in. softwood, whilst the upright is a piece of hardwood 1in. square and 2ft. 6ins. long. It is fixed in position with three strong

sin. angle brackets. The runner is made of ½in. hardwood (see Fig. 5).

The crosspiece is fixed firmly on the runner with four screws. A hole should be drilled in one side of the runner, so a threaded rod can be screwed in. The rod should be of sufficient length so it can be bent at right angles to allow it to be turned easily.

Finally the condensers. These should fit snug in the bottom of the lamphouse. The top condenser is suspended over the first by means of a piece of thick card-

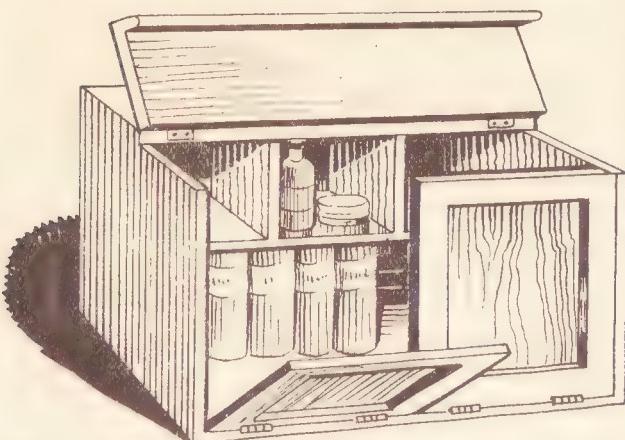
board 2ins. wide, 11ins. long, bent round the inside of the tin (see Fig. 1).

As an alternative to the condensers, a piece of diffused glass over the hole in the lamphouse will be nearly as good, but exposures will be much slower. A piece of diffused glass costs only a few coppers.

The illumination should be provided by a 100 watt enlarging lamp. A coat of matt black paint on all but the movable parts and the baseboard will give it a pleasing appearance.

(232)

For the handyman or craftsman this is an ideal HOME UTILITY CABINET



THE cabinet shown in our illustration at Fig. 1 would serve many useful purposes—as a photographic store or for the young chemist or as a home medicine cabinet. It can be made up from Hobbies prepared panels of wood. Now, in spite of our cabinet being of ample proportions—it measures 16½ ins. long, 8ins. wide and 10½ ins. high—wood $\frac{1}{2}$ in. thick only has been used throughout. It has, however, been so constructed that the fixing fillets inside and the shelving and partitions make an extremely strong and rigid case.

The worker may choose to supplement the glue and screws with brass angle plates screwed in either inside the cabinet or at some of the outside corners.

The Floor

The floor may be made from one complete panel of wood 20ins. by 8ins. cut across at 16½ in. length (see Fig. 2). Upon the floor the two sides are erected,

and bottom by cross screwed on. Another fillet runs along the front edge of the floor. This is to take the hinges of the doors as well as to strengthen the cabinet at this point.

The simple arrangement of the partitions inside the cabinet is seen in Fig. 3, where the dimensions of the three parts are also given. Notches must be cut as shown to fit round the fillets inside the case. Careful measurements should be taken for an accurate fit.

The doors are hinged along their lower edge and let down from the top, making for easy access to the interior of the cabinet. Each door measures 9½ ins. by 8ins., one complete Hobbies standard panel can therefore be used for the pair.

Door Stiffeners

To stiffen each door, and also to give a panelled appearance, four rails are cut and glued on as Fig. 4. Make the butt joints as close as possible, and when the glue has hardened thoroughly, insert

lower fillet of the case, and flush with the top edges of the sides.

The method of fixing the hinges is shown in the enlarged diagram in Fig. 4. Cut shallow recesses in the lower rails of each door to take both flaps of the hinges, then screw them in place. Hold each door in turn against the floor fillet of the case and, turning down the flap of the hinge, prick the holes for the remaining screws into the front fillet.

Drop Lid

For the top lid of the cabinet we require a complete panel of wood. This will be cut through lengthways to form the folding front flat as seen in Fig. 1. The panel will be cross-cut at one end, a piece about 3½ ins. being taken off. The two sections will be held together by a pair of stout hinges, after which the back section will be screwed firmly to the back fillet of the case and to the sides.

Wooden dowel pins may be inserted here into the end grain of the sides, the pins being previously dipped into or brushed with glue to make a good hold. A shallow fillet of wood should be glued and screwed along the front edge of the opening lid flap, to stiffen and act as a lip for holding the two front doors in place.

The finish to be put upon the wood outside and inside the cabinet must be left more or less to the individual worker. The kind of wood used will also influence the finish.

If plain white wood has been adopted, then two coats of paint would form the ideal finish. If, on the other hand, the worker has been fortunate enough in obtaining mahogany, then this wood may be simply stained and varnished or brush polished. In the latter case it would be advisable to just stain the wood inside

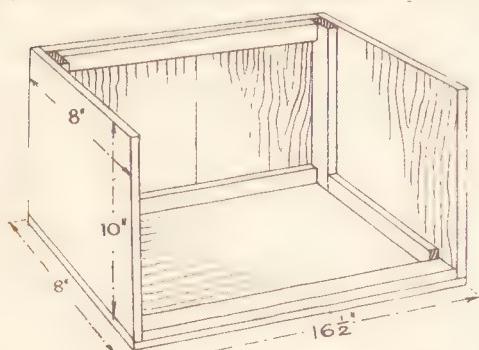


Fig. 2—The bottom, sides and back of case

measuring 10ins. by 8ins. As fixing end grain of wood is not the strongest, we have introduced a glued fillet to the angle inside, between the sides and floor.

One of these strengthening fillets is seen in Fig. 2, which, by the way, shows the thicknesses of wood exaggerated to indicate the joints of the wood and the

some screws from the back of the doors into the rails. The points of the screws must not penetrate the front surfaces of the rails, therefore some care must be taken to choose the proper length of screw for the purpose. Trim the edges of the doors to fit exactly between the sides of the cabinet and between the

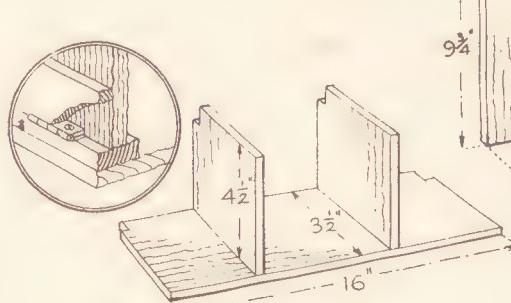


Fig. 3—Inside partition and shelves

the cabinet and omit the varnish or polish.

If brass angle plates are to be added as advised for strength, then these will be put on after the painting or staining has been done.

To make the cabinet to the dimensions given here, five of Hobbies K4 standard panels will be required.

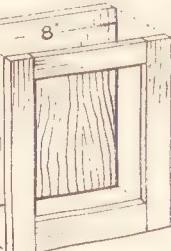


Fig. 4 The Door

Add to the doll's house lighting, this handsome DOLL'S ELECTROLIER

THE lighting system of many Doll's Houses consists of a small volt electric bulb fixed to the ceiling. How much more realistic a true-to-scale model electrolier would be, and by following the instructions given below, such a model can be easily made and without special tools.

The fitting consists of a wooden frame to which are attached the bulb holders and the central column. Fixed to the top and bottom of the carrier are two metal crosses, insulated from each other to form the electrical contacts between bulb holders and central column. The lamp is completed by fitting small shades to each bulb.

The Frame

From a piece of $\frac{1}{8}$ in. thick plywood cut a 3ins. square. On this mark out a cross as shown at Fig. 1, each arm being $\frac{1}{8}$ in. wide. Drill $\frac{1}{8}$ in. diameter holes $\frac{1}{8}$ in. from the end of each arm, and one in the centre where the arms cross. Slightly countersink the holes on both sides of the wood. Carefully cut out the cross,

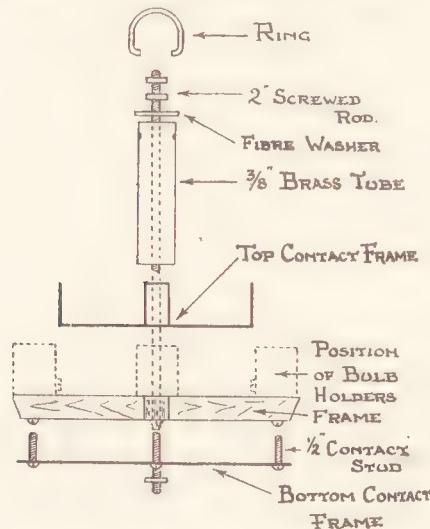


Fig. 2—The various parts exploded for detail

file and glasspaper the edges, shaping the underneath side of each end as shown.

For the metal contact frames obtain a piece of very thin sheet brass or aluminium. The brass called 'shim' and used in motor engineering is most suitable. Using the wooden frame as a pattern, cut out two crosses, one for the top and one for the bottom of the frame.

In the centre of the top one drill a hole $\frac{1}{16}$ in. diameter and bend the ends of the arms upwards for $\frac{1}{8}$ in. An $\frac{1}{8}$ in. diameter hole is drilled in the centre of the bottom frame, and $\frac{1}{8}$ in. holes $\frac{1}{8}$ in. from each end, to correspond with the holes in the wooden frame.

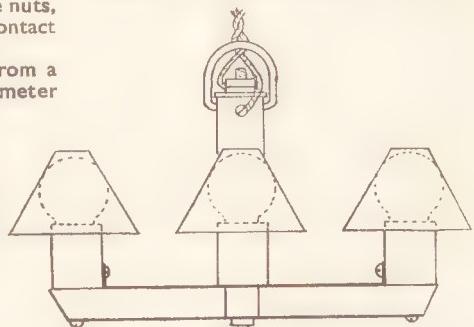
The central column is made in two parts, both being insulated from each other. Obtain an $\frac{1}{8}$ in. diameter screwed rod 2ins. long, complete with three nuts, with which to form electrical contact with the bottom metal frame.

The other connection is made from a piece of brass tubing $\frac{1}{8}$ in. in diameter and 1 $\frac{1}{2}$ ins. long. At one end drill two holes $\frac{1}{8}$ in. in diameter, opposite to each other, to take a split metal ring. Also at this end drill another hole and tap to take an $\frac{1}{8}$ in. stud, to which one end of the flex is attached. This metal tube makes contact with the top metal frame.

Bulb Holders

Small brass screw-in type bulb holders to take a flash lamp bulb are sold which have a brass base screwed to them and this must be removed as it is not required. Replace the screw that holds this base with an $\frac{1}{8}$ in. whitworth screw $\frac{1}{8}$ in. long, so each holder can be attached to the frames.

holders. Remove, drill $\frac{1}{8}$ in. holes and re-assemble, this time screwing the contact strip to each holder. The ends



of the strip can now be trimmed off. All is seen in the assembly at Fig. 2.

Having made sure that there is no connection between the bottom and top contact frames, a thin layer of insulating tape can be bound round the threaded rod. Put the metal tube over the rod making contact with the top metal frame. Place a fibre washer on top of the tube and tighten up with a nut.

Bulbs can now be fitted and the model tested, using the outside of the metal tube as one contact, and the threaded rod as the other. Make any adjustments that are necessary.

Make and fix a small brass ring to fit the holes in each side of the centre tube, making sure that it does not touch any part of the threaded rod. On the top of this rod put a second nut to form a terminal for the flex.

Painted Finish

The model can now be painted, gold being very effective for such a fitting. The electrolier is hung from a hook in the ceiling of the doll's house. It may be necessary to have a short length of light brass chain fixed from the hook in the ceiling to the ring of the lamp, for it to be hung at the correct height.

From the terminal on the threaded rod and the stud in the side of the centre column, connect silk-covered twin bell flex to the electricity supply for the doll's house. It may be necessary to adjust the balance of the fitting when suspended, and this can be done by binding a few turns of copper wire round one or more of the bulbs.

For the shades cut a piece of very thin parchment to the shape shown at Fig. 3. Join the edges with quick-setting glue and place over the bulbs, which should be of the spherical type. The shades can be held in position with a touch of heat-resisting glue.

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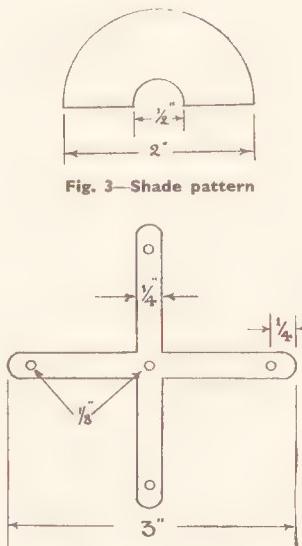


Fig. 1—The main arms shape

Assembly

Place the flat metal contact strip on to the wooden frame and pass the threaded rod through. Put a nut on the end of the rod, and push the rod up until the nut makes contact with the metal strip. Attach the bulb holders to each end by first pushing the holding stud through the frame and making contact with the strip.

Now place the smaller contact strip over the screwed rod, but it must not touch this rod when fixed. The upturned ends will now touch the sides of the holders. In the middle of these mark the position of the studs in the side of the

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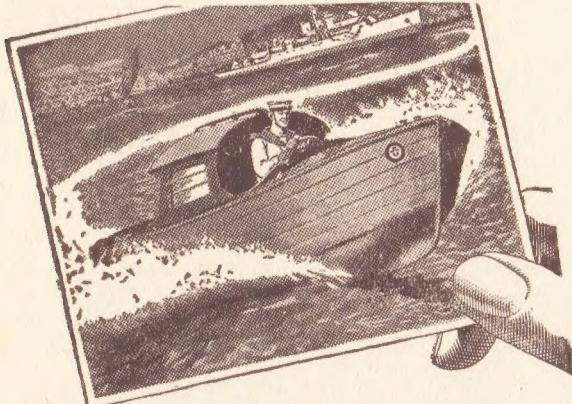
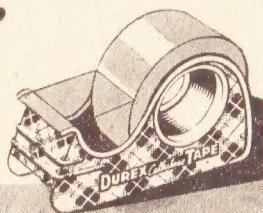


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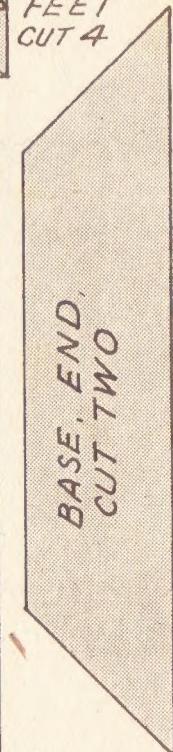
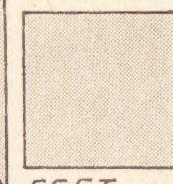
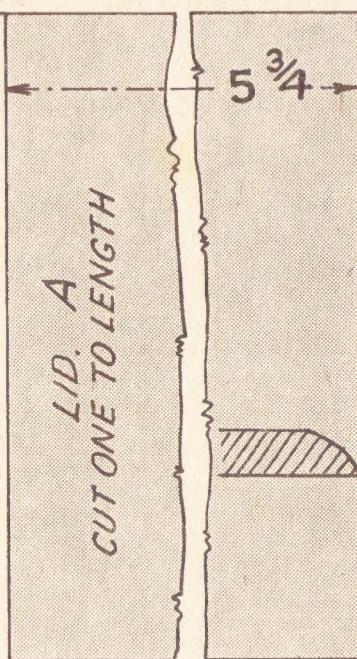
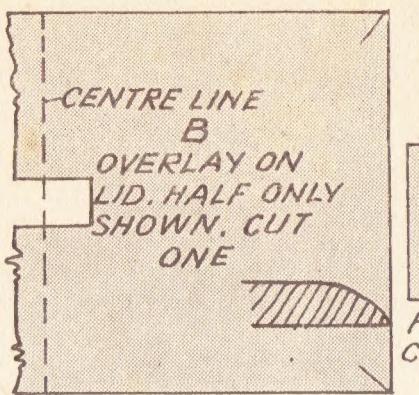
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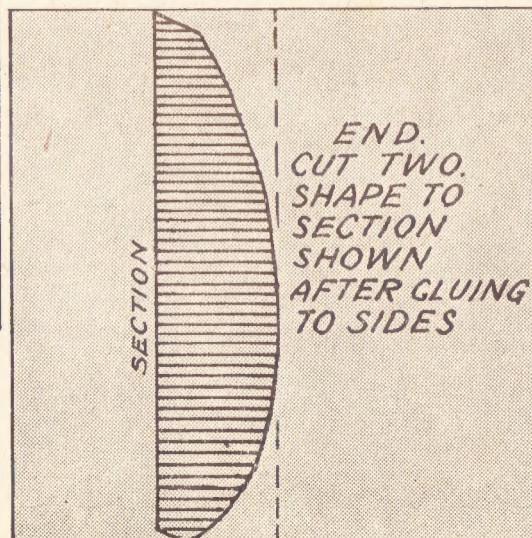
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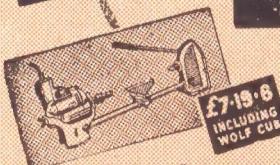


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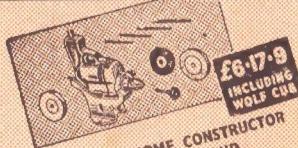
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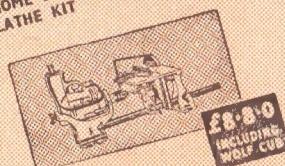
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